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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Naoki Mitsuta

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EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

06/12/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/505,442	Applicant(s) MITSUTA ET AL.	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-13 is/are pending in the application.
- 4a) Of the above claim(s) 12 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed April 14, 2009. Claims 1, 5, 9, 10, and 11 have been amended. Claim 4 has been cancelled. Claims 12 and 13 were previously withdrawn. Claims 1-3 and 5-11 are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wald et al. (US 7,217,471) in view of Mowrer et al. (US 5,942,073).

Wald et al. teach a membrane electrode assembly (MEA for use in a polymer electrolyte fuel cell (abstract).

Regarding claims 1 and 9, Wald et al. teach that the membrane is sandwiched between two catalyst layers, wherein the catalyst layers are positioned in the inner circumference side of the membrane (Figure 2; column 5 lines 53-67). An adhesive, or gasket, is formed on the outer circumference of the catalyst layers and adheres to the membrane (Figure 2).

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With regard to claims 1, 5, 9, 10, and 11, the adhesive layers are integral to, or permeate, the diffusion layers (column 3 lines 27-31). Since the gas diffusion layers are integral to the diffusion layers, the structure of the assembly is the same as a structure in which the diffusion layer "coats" the adhesive layer.

Wald et al. fail to teach that the adhesive contains fluorine, and is a polysiloxane having two or more alkenyl groups and a tensile elongation at break of 150% or more.

Mowrer et al. teach an adhesive/adherent system comprising a polysiloxane resin having alkenyl side groups (abstract, column 3 lines 51-64).

Mowrer et al. teach that the polysiloxane adhesive is desirable when the adherent also contains siloxane, as could the coating of Wald et al., because of the bonds that form between the Si and O atoms (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the adhesive/adherent system of Mowrer et al. in the assembly of Wald et al. since the bonding between the siloxane units would be strong.

As for the tensile elongation (claim 2) and amount of filling (claim 6), if the polysiloxane of Mowrer et al. was used in the membrane electrode assembly of Wald et al., these properties would be inherent because the adhesive of Mowrer et al. is the same as the claimed adhesive.

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4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wald et al. in view of Mowrer et al. as applied to claim 1 above, and further in view of Matlock et al. (US 6,261,711).

The teachings of Wald et al. and Mowrer et al. as discussed above are incorporated herein.

Wald et al. in view of Mowrer et al. teach the MEA of claim 1, but fail to teach the relative sizes of the anode and cathode catalyst layers.

Matlock et al. teach a sealing system of a fuel cell. The system includes a cathode catalyst layer (308) ending closer to the edge of the membrane than the anode catalyst layer (308') (Figure 7; column 5 lines 33-47).

It would be desirable to use a cathode catalyst of larger surface area than the anode catalyst, such as taught by Matlock et al., in the fuel cell of Wald et al. in view of Mowrer et al. if it was determined that a larger reaction area was required on the cathode side of the membrane.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a cathode catalyst of larger surface area than the anode catalyst, such as taught by Matlock et al., in the fuel cell of Wald et al. in view of Mowrer et al. if it was determined that a larger reaction area was required on the cathode side of the membrane.

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wald et al. in view of Mowrer et al. and Ito et al. (US 2001/0055711).

The teachings of Wald et al. and Mowrer et al. as discussed above are incorporated herein.

Wald et al. in view of Mowrer et al. teach the fuel cell of claim 9 but fail to teach the use of the fuel cell in a transport apparatus.

Ito et al. teach a solid polymer electrolyte fuel cells for use in automobiles because they provide high current density at low temperature ([0004]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the fuel cell of Wald et al. in view of Mowrer et al. in an automobile since it provides high current density at low temperature.

Response to Arguments

6. Applicant's arguments filed April 14, 2009 have been fully considered but they are not persuasive.

Applicant first argues, on pages 9-11 of the Remarks, that Wald et al. fail to teach the structure from now cancelled claim 5, specifically that the diffusion layer “coats” at least one of catalyst layers and the adhesive support layer.

It appears Applicant is arguing that, although the diffusion layer of Wald et al. abuts both the catalyst layer and the adhesive support layer, it “merely make[s] slight contact” and therefore does not read on the claim limitation. The examiner disagrees.

The examiner holds that the structure of Wald et al. meets the claim limitation, and that the diffusion layer “coating” the adhesive layer or catalyst layer does not need to be taught, since such a reading of the claim would result in a product-by-process

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limitation. The courts have held that patentability is based on a product itself, even if the prior art product is made by a different process. MPEP 2113.

The final product of Wald et al. meets the claim limitations, since not only does the diffusion layer "merely make slight contact" with the catalyst layer, but it also is integrated with the adhesive layer. The skilled artisan would recognize that a coating method would result in integration of the diffusion layer and the adhesive layer. Thus, the final structure of Wald et al. is the same as the claimed structure.

Next, on pages 11-16, Applicant argues that one having ordinary skill in the art would not be motivated to make the reaction area on the cathode side of the membrane larger in relation to the anode side, as is suggested in the combination of Wald et al. in view of Mowrer et al. and Matlock et al. Applicant also argues that Matlock et al. do not cure the alleged deficiencies of Wald et al. in view of Mowrer et al., but those alleged deficiencies have been addressed above.

Applicant argues that the skilled artisan would not be able to recognize instances in which it would be desirable to make the cathode reaction larger, as is taught in Matlock et al. The examiner disagrees.

The skilled artisan knows that the catalyst materials used for the anode and the cathode of a fuel cell may be different. In such a situation, the catalytic activity of one catalyst may be higher than the other, based on the fact that two different materials would have two different levels of activity. For the material with lower activity, e.g. the cathode catalyst, a higher surface area of catalyst would allow for more reaction sites.

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By increasing the cathode catalyst surface area based on the activity of the anode side, the cathode side would have increased catalytic activity and would provide an equal amount of catalytic activity as the anode side. Such a situation can easily be conceived of by the ordinarily skilled artisan.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1795

aee